UNIVERSITÀ DEGLI STUDI DEL MOLISE

Società Botanica Italiana onlus

104° Congresso Nazionale della Società Botanica Italiana onlus

Le scienze botaniche nella cultura e sviluppo economico del territorio

Riassunti delle comunicazioni e dei poster

Campobasso, 16-19 settembre 2009
Aula Magna di Ateneo

A cura di Piera Di Marzio, Paola Fortini e G. Stefania Scippa

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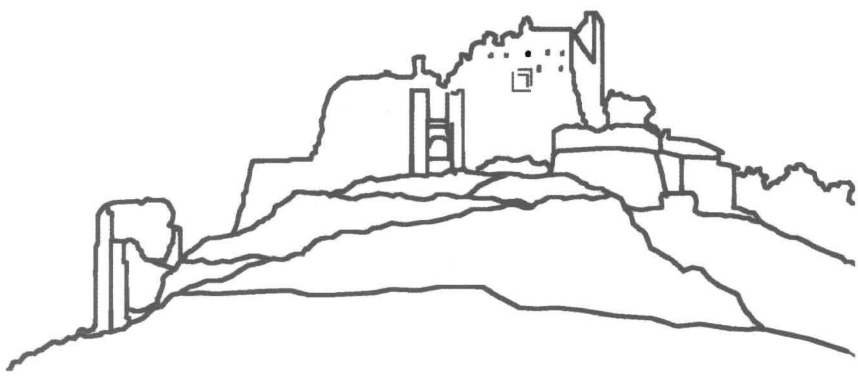

Riassunti delle comunicazioni e dei poster

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P2 = Is Lake Cheko an impact crater created by the 1908 Tunguska Event? Some hints from pollen and micro-charcoal analysis

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We present results of a pollen analysis carried out on sediment cores collected from a small Siberian lake (Lake Cheko) located close to the epicenter of the 1908 Siberian explosion, the so called Tunguska Event. The purpose of our study was finding evidence pro or contra the hypothesis that Lake Cheko might fill an impact crater left by a fragment of the cosmic body that survived the atmospheric explosion, and hit the ground ~10 km NW of the inferred epicenter. This hypothesis was suggested by a number of indirect evidence, including lake's unusual funnel shape, stratigraphy of the lake's deposits and the absence of documental evidence that the lake existed prior to the 1908 (1, 2, 3).

Material and Methods

Pollen and micro-charcoal data were obtained from two sediment cores: TG99-21 and TG99-22. Analyses were carried out on 30 samples, following standard treatments and counting from 500 up to 1000 pollen grains/sample. We determined also the abundance of micro-charcoals in order to estimate the frequency of forest fires in the region around the lake. Pollen diagrams are similar and they show a taiga vegetation, like the present one, mainly formed by conifers and birch with very few shrubs and herbs. Periodical fires are suggested by peaks in >250 μm micro-charcoals coinciding with decreases in tree pollen concentration.

Results

Both diagrams show a similar major pollen Event (*pEvent*): the appearance, at about half of the cores, of hydrophytes, coinciding with a general fall in the concentration of taiga pollen. The *pEvent* divide both diagrams in two pollen zones: Zone I shows a taiga forest growing on wet ground and absence of hydrophytes; Zone II shows a lake surrounded by taiga forest testified by the appearance and subsequent continuity of hydrophytes. Interestingly, age estimate carried out on the TG-22 sediments using short-lived radioisotopes indicate that the *pEvent* could lay close to the beginning of the last century (Gasperini *et al.*, in press). Moreover, while the sediments in the upper part of the TG99-22 core appear typical lacustrine, being constituted by faintly laminated, fine-grained deposits, below the pEvent we found massive to chaotic coarser grained sediments and vegetation macro-remains (3).

Conclusions

Pollen diagrams suggest that no lake existed prior to the *pEvent*, but a taiga forest growing on wet ground. Furthermore, they suggest the presence of a lake starting from the *pEvent*. The abrupt decrease in tree pollen concentration occurring during the *pEvent* and the absence of micro-charcoals are in agreement with the impact of a cosmic body which destroyed the local forest without causing a fire.

1) L. Gasperini, F. Alvisi, G. Biasini, E. Bonatti, G. Longo, M. Pipan, M. Ravaioli, R. Serra (2007) Terra Nova, 19 (4): 245–251.

2) L. Gasperini, E. Bonatti, G. Longo (2008) Terra Nova, 20: 169-172.

3) L. Gasperini, E. Bonatti, S. Albertazzi, L. Forlani, C.A. Accorsi, G. Longo, M. Ravaioli, F. Alvisi (in press) Terra Nova.